

Application No.: 10/817,580

Docket No.: JCLA12583

AMENDMENT

In The Drawings:

Please substitute the attached clean drawings of Figs. 1C and 3D for the pending drawings.

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REMARKS

Drawings

The Office Action objected the drawings as the figures being improperly cross hatched. In response hereto, Applicants have amended the drawings as instructed by the Examiner and a clean version of corrected drawings has been submitted hereby.

Discussion of Office Action Rejections

The Office Action rejected claims 1-6, 8-14 and 16 under 35 U.S.C. 103(a) as being unpatentable over Huang et al., US Patent No. 6,521,997 in view of Mencik et al., US Patent No. 5,163,605.

In response to the rejection to claims 1-6, 8-14 and 16 under 35 U.S.C. 103(a) as being unpatentable over Huang et al., US Patent No. 6,521,997 in view of Mencik et al., US Patent No. 5,163,605, Applicants hereby otherwise traverse this rejection. As such, Applicants submit that claims 1-6, 8-14 and 16 are now in condition for allowance.

With respect to claim 1, as originally filed, recites in part:

... said third solder mask opening having a length direction, said third solder mask opening along said length direction being divided into a central area, a

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first extension area, and a second extension area, said central area being between said first and said second solder mask openings, said first extension area and said second extension area extending from said central area along said length direction to two sides respectively, the width of said central area being smaller than the width of said first extension area.

Similarly, claim 8, recites in parts:

... said third solder mask opening having a length direction, said third solder mask opening along said length direction being divided into a central area, a first extension area, and a second extension area, said central area being between said first and said second solder mask openings, said first extension area and said second extension area extending from said central area along said length direction to two sides respectively, the width of said central area being smaller than the width of said first extension area ...

Applicants submit that the present invention as set forth in claims 1 and 8 is neither taught, disclosed, nor suggested by Huang, Mencik or any of the other cited references, taken alone or in combination.

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The Examiner admitted that Huang did not disclose the width of said central area being smaller than the width of said first extension area. Although Huang states that besides elliptic shaped illustrated in FIG. 1, the recessed portion 13 can also be made as circular, rectangular or any suitable shape without being particularly limited (Column 3, line 23-26), he does not specifically disclose the width of said central area being smaller than the width of said first extension area that performs superior performance as set forth in claims 1 and 8. Huang does not provides or even imply to provide a motivation or any suggestion to do so.

With respect to Mencik, although he discloses a component 50 mounted on a circuit board and with larger area of solder mask removed from the area beneath the component, shown by outline 90, to facilitate removal of debris from underneath component, as recited by the Examiner, he also does not teach, suggest or disclose the third solder mask opening having a width of said central area being smaller than the width of said first extension area, as set forth in claims 1 and 8.

The Examiner held that the third opening of a specific shape as set forth in claims 1 and 8 is a mere change in the shape. Applicants respectfully disagree. Note, advantages directed to the present invention as set forth in claims 1 and 8 are illustrated in the specification (Paragraphs 0030-0033):

1. Because the width of the central area of the third solder mask opening can be reduced and the widths of the first and the second solder mask openings in two sides of the

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central area can be increased, when the pitch between the passive component electrode pads tends toward the fine pitch, the central area of the third solder mask opening can be accommodated between the first and the second solder mask openings to prevent the channel effect.

2. The cleaning liquid can more easily remove the flux remaining in the central area of the solder mask opening in order to increase the reliability of the circuit carrier.
3. During the encapsulation process, the encapsulant can more easily enter into the central area of the solder mask opening from the wider area of the opening, which increases the yield rate of the encapsulation process.
4. During the subsequent high temperature process such as reflow process, the solders will be more difficult to enter into the gap formed by the encapsulant and the substrate, which increases the yield rate of the subsequent high temperature process.

Applicants submit that such advantages are inherently related to the alleged change in the shape of the third opening. If a change in the shape is functional for obtaining so significant advantages, it is inventive rather than being construed as a mere change in the shape. Furthermore, teachings or suggestions can be found neither in Huang nor in Mencik. Therefore, one of ordinary skill in the art having the two reference accessed won't be able to obtain the present invention at the time the claimed invention was made.

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Accordingly, since unexpectedly advantageous and superior results are resulted from the outstanding structures as set forth in claims 1 and 8, claims 1 and 8 are nonobvious over Huang and Mencik, or any of the other cited references, taken alone or in combination.

Moreover, neither Huang nor Mencik teaches, discloses or suggests the third solder mask opening having a width of said central area being smaller than the width of said first extension area, as set forth in claims 1 and 8, thus even a combination therebetween fails to teach all of the limitation of claims 1 and 8.

For at least the foregoing reasons, claims 1 and 8 are submitted as allowable.

If independent claim 1 is allowable over the prior art of record, then its dependent claims 2-6 are allowable as a matter of law, because these dependent claims contain all features of their respective independent claim 1. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

If independent claim 8 is allowable over the prior art of record, then its dependent claims 9-14 and 16 are allowable as a matter of law, because these dependent claims contain all features of their respective independent claim 8. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

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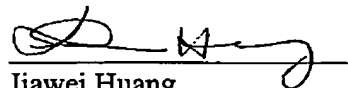
CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-6, 8-14 and 16 are in proper condition for allowance and an action to such effect is earnestly solicited. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

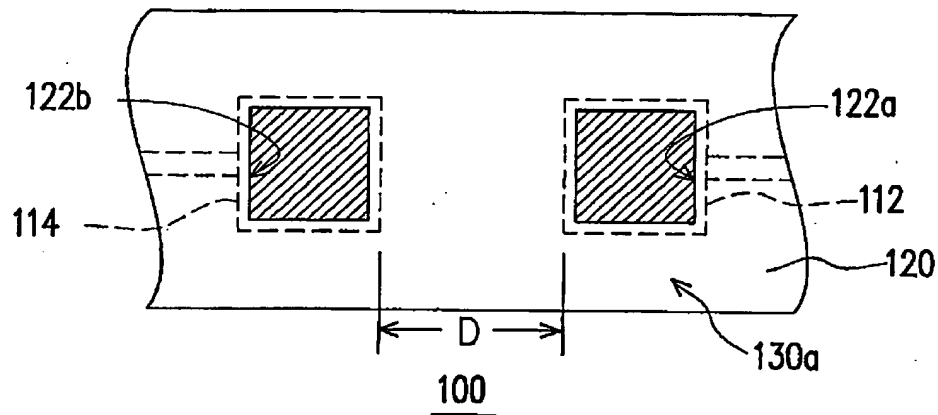
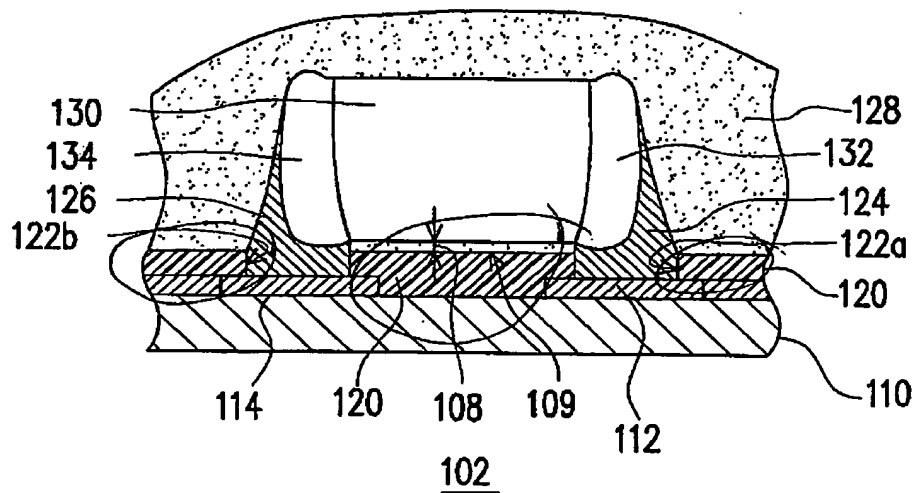
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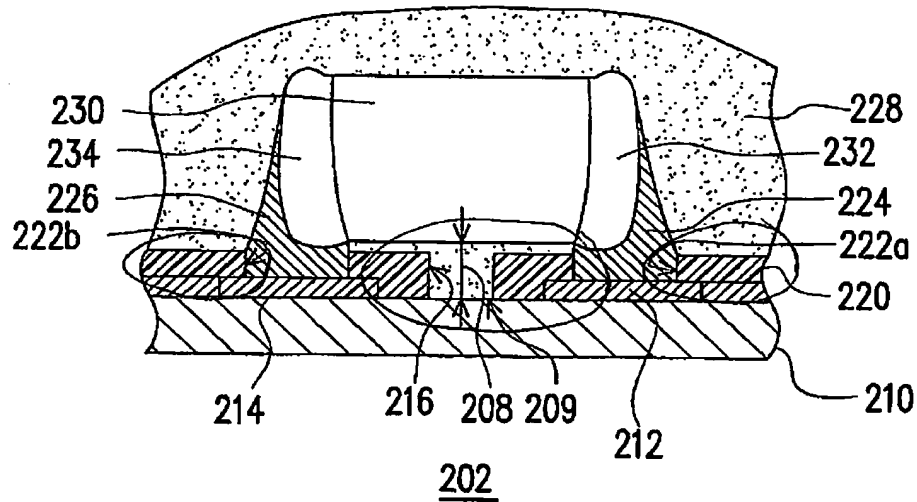
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Respectfully submitted,
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Annotated Marked-up drawing**BEST AVAILABLE COPY****FIG. 1B(PRIOR ART)****FIG. 1C(PRIOR ART)**

Annotated Marked-up drawing**BEST AVAILABLE COPY****FIG. 3D**